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September 11, 2000

Magalie Roman Salas, Secretary  
Federal Communications Commission  
Counter TW-A325  
The Portals, 445 12<sup>th</sup> Street, S.W.  
Washington, D.C. 20554

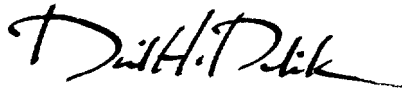
Re: Ex Parte Submission of Northpoint Technology, Ltd.  
ET Docket No. 98-206, RM-9147, RM-9245

Dear Ms. Salas:

In accordance with Section 1.206 of the Commission's rules, 47 CFR § 1.1206, this letter is written to notify you that Sophia Collier, Antoinette Cook Bush, and Bob Combs of Northpoint Technology, Ltd. and Saleem and Carmen Tawil of Diversified Communications Engineering, Inc. (collectively, "Northpoint") met on September 8, 2000 with Thomas Tycz, Harry Ng, Ira R. Keltz, Jennifer Gilsenan, and Karl A. Kensinger of the International Bureau. The Northpoint representatives discussed the applicability of the NGSO "interference budget" to Northpoint/DBS spectrum sharing and how this NGSO interference budget might impact the size of the Northpoint mitigation zone under various scenarios. The Northpoint representatives discussed and distributed copies of the enclosed presentation.

An original and six copies of this letter and its attachment are submitted for inclusion in the public record for the above-captioned proceedings. Please direct any questions concerning this submission to the undersigned.

Respectfully submitted,



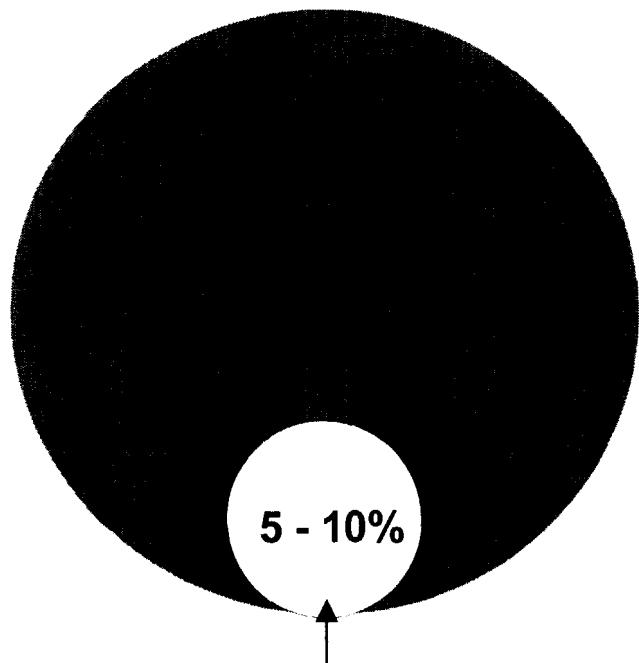
David H. Pawlik  
Counsel for Northpoint Technology, Ltd.

cc: Thomas Tycz  
Harry Ng  
Ira R. Keltz  
Jennifer Gilsenan  
Karl A. Kensinger

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# NGSO-Based Proposal Overview

## NGSO-based Proposal



*Mitigate to the extent that no DBS customer has more than a theoretical 2.86% increase in "unavailability"*

Northpoint estimates that the NGSO-based proposal would impose a requirement to provide mitigation to DBS consumers in approximately 5 - 10% of its service area in order to reach the 2.86% criterion in the manner calculated by DBS.

To evaluate the NGSO-based proposal it is important to examine what benefits consumers in this mitigation zone would receive from the 2.86% criterion and what costs would be borne by Northpoint and all other consumers.

# What Does “2.86% in Increased Unavailability” Actually Mean for the Few Consumers Who Will Experience It?

- Consumers watch almost 2,600 hours of television a year or over 153,000 minutes (7 hours per day according to A.C. Nielsen)

BSS Link from ITU Database	DMA Rank	DMA	% of DBS Customers Impacted	Time Below Operating Threshold	Actual Outage Freeze Frame	After 29% Factor for Actual Viewing	Monthly minutes of increased outage
US-GSO D2(a)	1	New York	Less than 1%	14	8	2.3	0.19
US-GSO 4C6	2	Los Angeles	"	24	11	3.3	0.28
US-GSO 4D2	3	Chicago	"	21	13	3.8	0.32
US-GSO 4A3	7	Dallas	"	38	27	7.9	0.66
US-GSO 4C5	11	Houston	"	47	31	8.9	0.74
US-GSO 4C10	12	Seattle	"	21	10	2.8	0.23
US-GSO D10(a)	15	Minneapolis	"	33	16	4.5	0.38
US-GSO D1(a)	16	Florida (Miami)	"	28	18	5.3	0.45
US-GSO 4A8	36	Salt Lake City	"	3	1	0.4	0.03
US-GSO 4C9	37	San Antonio	"	49	31	9.1	0.76
Average			Less than 1%	28	17	4.8	0.40

Selected links represent all U.S. cities within the ITU BSS database and show the link with highest number of minutes of “increased unavailability” as calculated by DBS among all links serving the DMA

# Full Pictures Are Available Even When DBS Says It Is “Unavailable”

Extract from current ITU database of BSS links provided as  
“representative” by the DBS industry.

Used to  
calculate  
availability



		USA	USA
BSS characteristics	Units	US-GSO 1(a)	US-GSO 1(b)
<b>System Characteristics</b>			
Frequency	GHz	12.7	12.700
Availability objective	%	99.92	99.94
Receiver noise Bandwidth	MHz	24	24.0
Modulation type		QPSK	QPSK
Polarization (angle as defined in Annex 2 of APS30 in case of linear polarization)		CL/CR	CL/CR
C/I due to frequency re-use (polarization discrimination)	dB		
C/I due to other GSO BSS networks	dB	20.7	23.7
C/I due to GSO FSS networks	dB	99.0	99.0
Clear sky feeder link C/N+I	dB	24.2	24.2
C/N+I required at operating threshold	dB	5	7.6
C/N+I required at the freeze frame performance point of the link (2)		3.5	6.1

(2) When the high frequency of data errors causes the MPEG decoder to cease providing full pictures

## What Would Northpoint Need to Do In Order to Provide Mitigation to the 2.86% Limit?

- In order to protect to the 2.86% level for less than 1% of DBS customers, Northpoint would need to do an additional 50 – 100,000 square miles of mitigation on a national basis, adding significantly to its system cost and rendering uneconomical deployment in low density rural areas where each incremental repeater has fewer and fewer customers, yet service is needed most.

BSS Link from ITU Database	Rank	DMA	Square Miles in DMA	% of DMA that is Inhabited	Repeaters needed for Inhabited area	Square miles of additional mitigation proposed by DBS	Monthly minutes of outage after additional mitigation	% of DBS Customers Impacted
US-GSO D2(a)	1	New York	12,059	95%	164	1,558	0.19	Less than 1%
US-GSO 4C6	2	Los Angeles	41,271	90%	531	5,045	0.28	"
US-GSO 4D2	3	Chicago	10,469	90%	135	1,283	0.32	"
US-GSO 4A3	7	Dallas	27,526	90%	354	3,363	0.66	"
US-GSO 4C5	11	Houston	17,708	85%	215	2,043	0.74	"
US-GSO 4C10	12	Seattle	25,097	80%	287	2,727	0.23	"
US-GSO D10(a)	15	Minneapolis	41,235	70%	412	3,914	0.38	"
US-GSO D1(a)	16	Florida (Miami)	4,117	90%	53	504	0.45	"
US-GSO 4A8	36	Salt Lake City	136,689	30%	586	5,567	0.03	"
US-GSO 4C9	37	San Antonio	31,887	50%	228	2,166	0.76	"
Average						2,817	0.40	Less than 1%

Selected links represent all U.S. cities within the ITU BSS database and show the highest minutes of "increased unavailability" among all links serving the DMA

## **A Better Approach Using a C/I Ratio to Create an EPFD**

- Northpoint can address the legitimate DBS concern to avoid excessive increases in consumer outages and provide a high level of protection to all DBS customers by providing a minimum C/I protection. A C/I of 20 dB has been previously supported by DBS interests and can be implemented through an EPFD limit that would require mitigation below 20 dB.
- Benefits.
  - Provides an absolute threshold of protection.
  - Accounts for regional differences.
  - Provides greater average protection for all DBS consumers, not just excessive protection for a few.
  - Can be easily calculated and verified by field measurement
  - Supported by digital broadcast standards currently in use for digital terrestrial broadcast services.

## **Criteria the DBS Industry Has Previously Supported for Sharing With Terrestrial Systems**

- DirecTV used a C/I ratio of 19 dB (a 20% increase in unavailability) in “Terrestrial Interference in the DBS Downlink Band,” (DirecTV, April 11, 1994).
- “Tempo believes the TI DBS report by DirecTV, which specified a C/I ratio of 19 dB, causing a reduction of 20% availability in subscriber systems is more accurate [as a standard for protection].” Comments of Tempo Satellite, Inc. in RM 9245, April 20, 1998, paragraph 5a.
- “Echostar estimates that a more acceptable Carrier-to-Interference level would be at least 20 dB (equal to the cross polarization isolation level of the Low Noise Block Down Converter with Integrated Feedhorn).” Opposition of Echostar Communications Corporation, RM 9245, April 20, 1998, page 9.

# Interference Protection Criteria Used With Digital Terrestrial Broadcast Services

- In designing a protection standard for sharing among digital terrestrial broadcasters in the United States 15 dB C/I was determined to be sufficient.
  - DBS should not be able to claim additional protection than that provided to other television broadcast services in the United States – particularly to the detriment of a competitor.
    - If 15 dB C/I is sufficient for digital television broadcasters throughout the United States – it should be sufficient for DBS, a service also received with a set top box.\*
  - Northpoint has proposed 20 dB C/I – a significantly higher degree of protection than that afforded to all other digital television broadcasting services in the United States.

\* Terrestrial television broadcasters actually use 8-VSB which is less robust than QPSK used by satellite television broadcasters meaning that satellite broadcasters actually require even less protection, not more, than digital terrestrial broadcasters.



# What Does “C/I of 20 dB” Mean for the Few DBS Consumers Who Would Experience It?

BSS Link from ITU Database	DMA Rank	DMA	ANNUAL MINUTES			Monthly Minutes
			Additional Time Below Operating Threshold	Actual Outage Freeze Frame	After 29% Factor for Actual Viewing	
US-GSO D2(a)	1	New York	74	32	9	0.76
US-GSO 4C6	2	Los Angeles	171	61	18	1.48
US-GSO 4D2	3	Chicago	129	67	20	1.63
US-GSO 4A3	7	Dallas	244	149	43	3.60
US-GSO 4C5	11	Houston	274	148	43	3.57
US-GSO 4C10	12	Seattle	166	54	16	1.31
US-GSO D10(a)	15	Minneapolis	159	53	15	1.29
US-GSO D1(a)	16	Florida (Miami)	73	88	25	2.12
US-GSO 4A8	36	Salt Lake City	25	8	2	0.19
US-GSO 4C9	37	San Antonio	282	149	43	3.61
		Average	160	81	23	1.96

Selected links represent all U.S. cities within the ITU BSS database and show the link with highest number of minutes of “increased unavailability” as calculated by DBS among all links serving the DMA

## Comparison of NGSO-Based and C/I-Based Proposals – Minutes per Month

Under the C/I-based proposal a tiny fraction of consumers will experience the additional outage shown on the table – all other consumers will have an outage smaller than indicated.

BSS Link from ITU Database	DMA Rank	DMA	MONTHLY		
			NGSO- based proposal	C/I based proposal	Difference
US-GSO D2(a)	1	New York	0.19	0.76	0.6
US-GSO 4C6	2	Los Angeles	0.28	1.48	1.2
US-GSO 4D2	3	Chicago	0.32	1.63	1.3
US-GSO 4A3	7	Dallas	0.66	3.60	2.9
US-GSO 4C5	11	Houston	0.74	3.57	2.8
US-GSO 4C10	12	Seattle	0.23	1.31	1.1
US-GSO D10(a)	15	Minneapolis	0.38	1.29	0.9
US-GSO D1(a)	16	Florida (Miami)	0.45	2.12	1.7
US-GSO 4A8	36	Salt Lake City	0.03	0.19	0.2
US-GSO 4C9	37	San Antonio	0.76	3.61	2.8
		Average	0.40	1.96	1.6

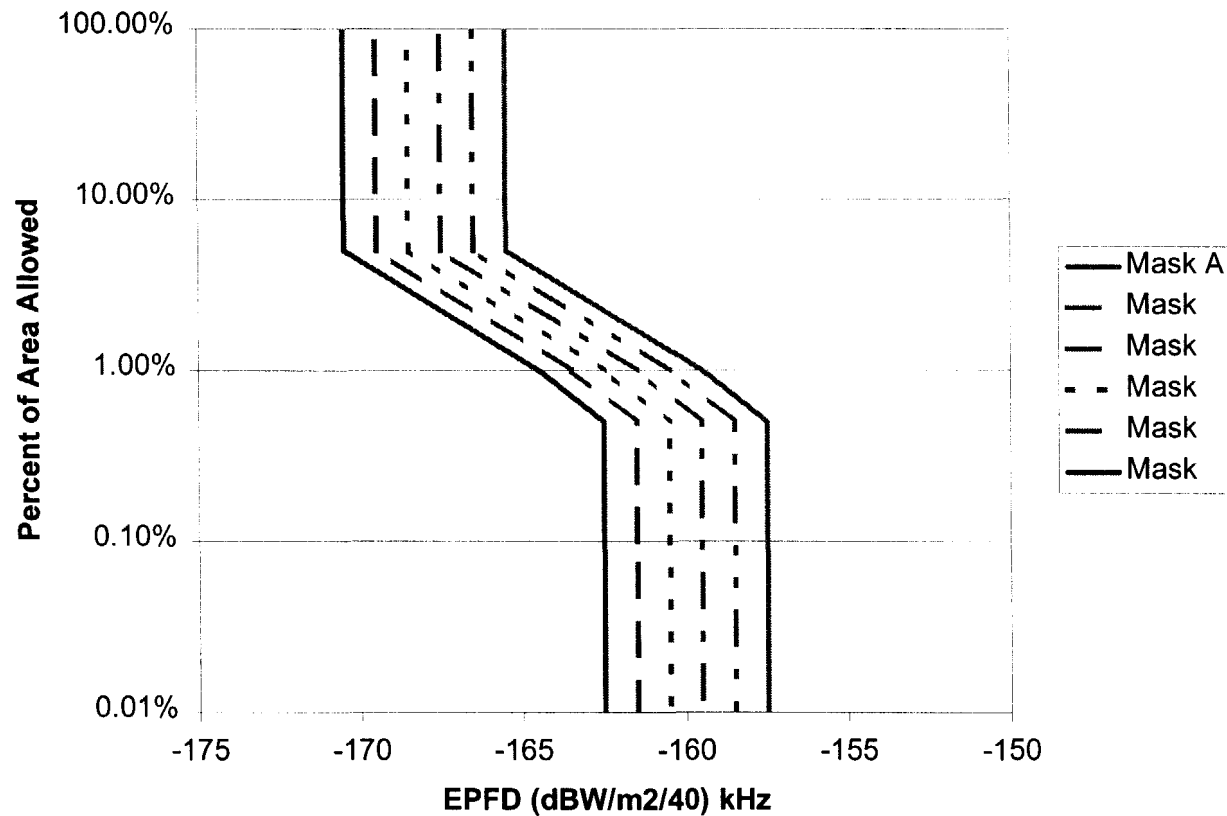
It is highly unlikely that any consumer would actually be able to tell the difference between these two proposals. It is most likely that a consumer would not notice any difference at all in either case - given that television is on in the home for an average of 7 hours a day or 12,750 minutes per month, an additional 1-3 minutes is trivial.

## Translating C/I levels to Power Levels to Create EPFD Limits

- It is essential that Northpoint based services receive an EPFD mask as the basis of operation – not a changing standard based on changes in DBS operations.
- An EPFD mask can be tailored for specific regions of the country to account for DBS signal power variances.

<b>Location</b>	<b>DBS Signal Power</b> (dBW/24 MHz)	<b>C/I ratio</b> (db)	<b>Interference Power</b> (dBW/24 MHz)	<b>EPFD</b> (dBW/m <sup>2</sup> /40 kHz)
Seattle	-124.9	20	-144.9	-163.5
Another area	-118.9	20	-138.9	-157.5

# The Northpoint Equivalent Power Flux Density Mask

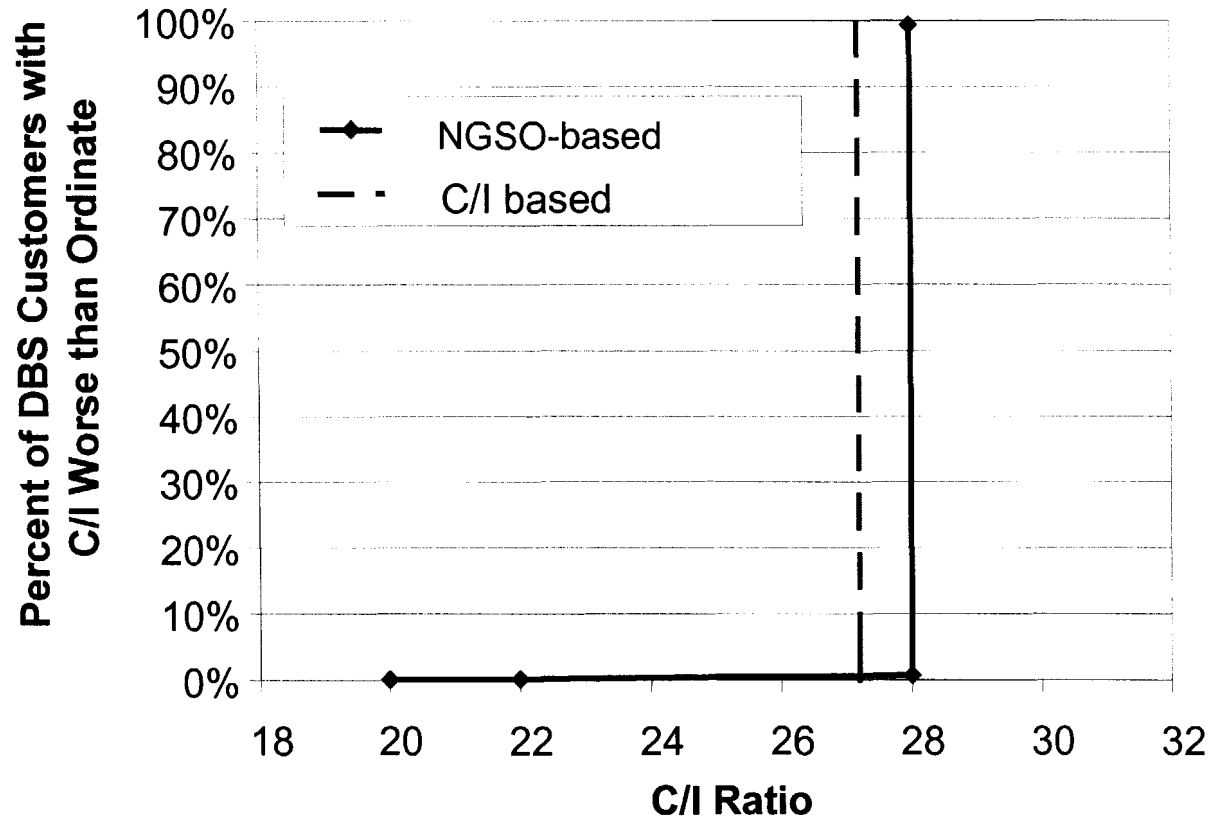


- Mask will vary to accommodate the range of DBS signal powers according to local conditions.

# Summary

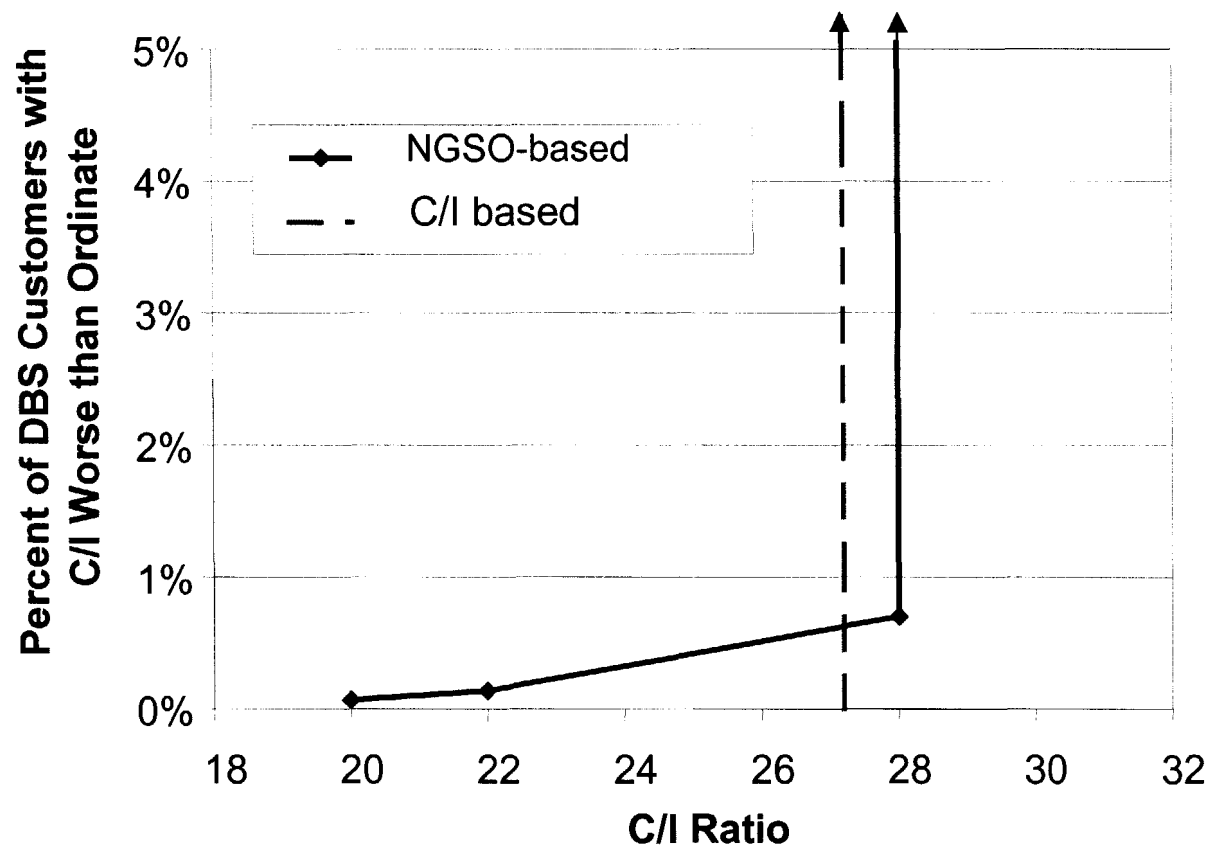
- The C/I based approach outlined in this report offers sufficient protection to DBS customers while not requiring an excessively large mitigation region and is thus greatly preferable to the NGSO-based proposal.
- This will enable Northpoint's Broadwave affiliates to deploy throughout the United States, including all of the Southwest, much of which would have been uneconomical under the NGSO-based plan.
- This will hasten new services to consumers including local signals to subscribers of satellite television services, broadband to rural areas and provide cable competition where there presently is little or none.

## Comparison of NGSO-Based and C/I Based Proposals



\*Operational protection provided by Northpoint EPFD Mask including the effect of natural shielding only.

## Comparison of NGSO-Based and C/I Based Proposals – Close Up View



\*Operational protection provided by Northpoint EPFD Mask including the effect of natural shielding only.

## Sample Conversion from C/I to EPFD

Percent of Area C/I not to be exceeded	100.0%	Units
DBS Carrier Power	-124.9	dBW/24 MHz
Allowable C/I	20	dB
Allowable Interference Power	-144.9	dBW/24 MHz
Bandwidth Conversion	-27.8	dB
Gain of 1 m <sup>2</sup> antenna	43.2	dB-m <sup>2</sup>
Peak antenna gain	34	dBi
EPFD	-163.5	dBW/m <sup>2</sup> /40 kHz